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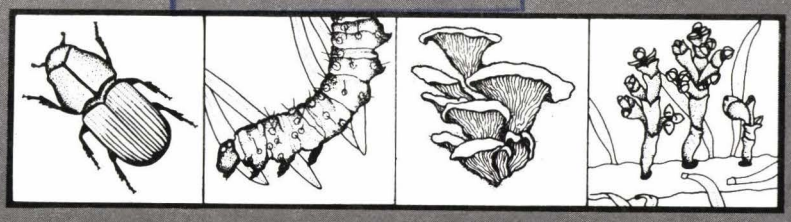

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Report 85-26 November 1985

EVALUATION OF A HEMLOCK SAWFLY OUTBREAK IN THE NORTHERN TIP OF IDAHO - 1985

by

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ABSTRACT

A rare outbreak of hemlock sawfly, Neodiprion tsugae Middleton, was detected in August in drainages near the Canadian border in Idaho infesting several thousand acres. Some stands of western hemlock and subalpine fir were severely defoliated. Understory Engelmann spruce trees were lightly defoliated. The sawfly overwinters in the egg stage within current needles. Very few eggs could be found during a survey in October. Some hemlock trees may be top-killed, but natural control agents usually cause these sawfly outbreaks to collapse in 1 or 2 years. No control action was recommended.

INTRODUCTION

Outbreaks of the hemlock sawfly are rare in the Northern Region. Hard et al. (1976) mentioned that it does occur in Montana and Idaho. However, in personal communications, Hard said this is a presumption based upon the hosts' distribution. I have never seen an infestation since coming to the Region in 1958, and no old reports of this pest can be found in local archives. In 1964, the Canadian Forest Service in British Columbia reported an outbreak in the Nelson area about 40 air miles to the north of the Idaho border.[1]

Thus, it was surprising in August when we received reports of heavy sawfly defoliation occurring along Boundary Creek northwest of Bonners Ferry Ranger District and in drainages north of Upper Priest Lake, Priest Lake Ranger District, Kaniksu National Forest, Idaho (fig. 1). Several thousand acres of mixed western hemlock, subalpine fir, and Engelmann spruce were infested. Hemlock was the most severely damaged tree species followed by subalpine fir. Feeding on spruce was light and occurred only in the understory.

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[1]Telephone conversation with Dr. Allan Van Sickle, Victoria, British Columbia, October 7, 1985.

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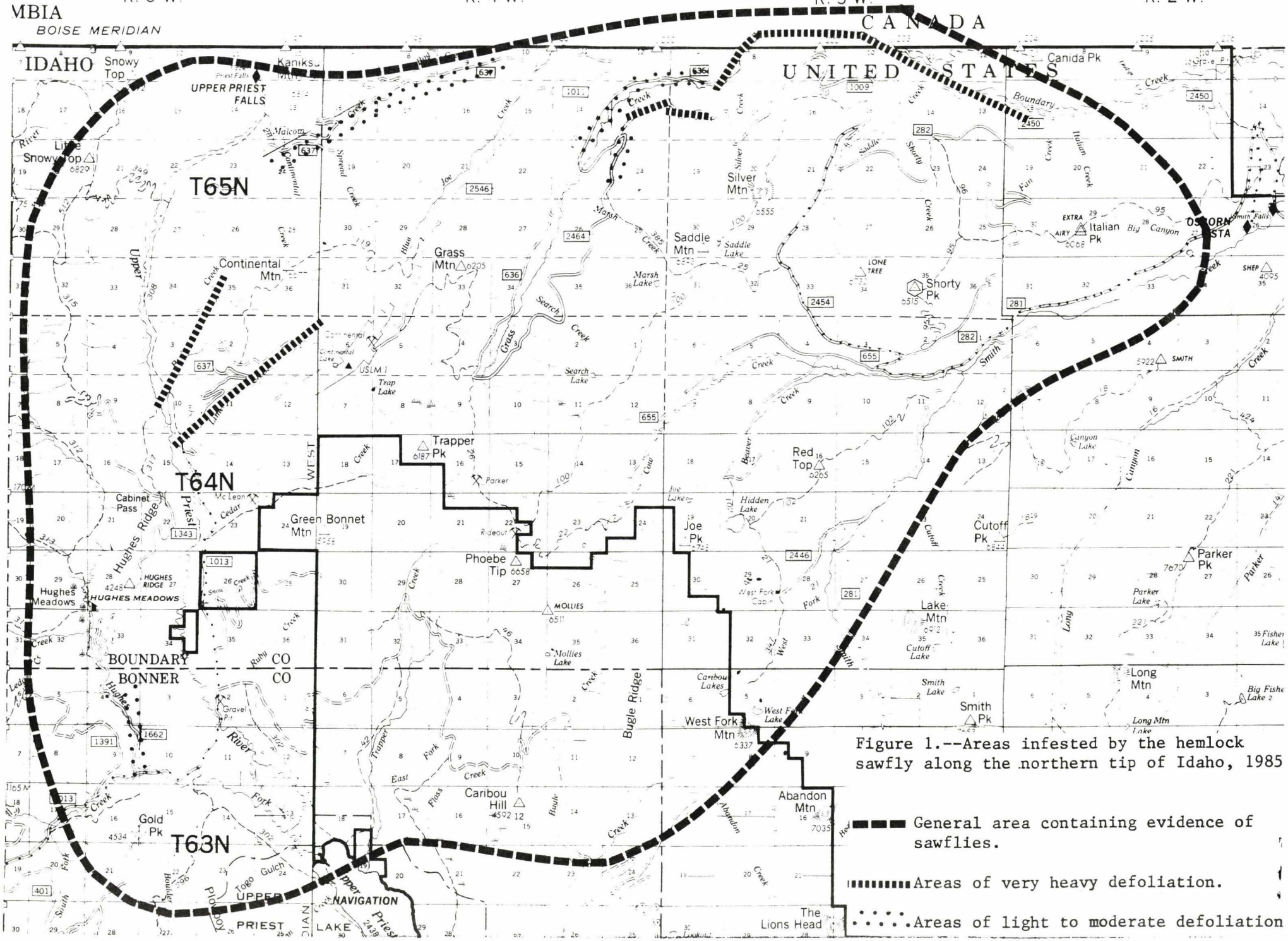

Past spruce beetle outbreaks have resulted in heavy salvage logging within the Boundary Creek drainages. Any further tree mortality will lead to excessive runoff from this watershed. In addition, lichens (moss) growing under the remaining old growth is an important food source for big game populations wintering in this area. Records indicate woodland caribou, an endangered species, have occasionally used these hemlock stands. Hence, continued defoliation by the sawfly could cause impacts if caribou use these areas.

Infested areas along Boundary Creek were examined on October 1 to assess the extent of the infestation and to predict what the population might do in 1986.

BRIEF LIFE HISTORY OF THE HEMLOCK SAWFLY

The sawfly overwinters in the egg stage. Eggs are deposited in slits cut along edges of needles. Eggs hatch about June and larvae feed on old needles through August. New needles will be consumed if populations are extremely high. Prepupae spin cocoons wherever they rest after feeding. Most pupate on twigs or in the duff. Adult sawflies emerge from the cocoons from August through October, then mate and lay eggs (Hard et al. 1976).

SURVEY METHODS

Current hemlock needles from trees in defoliated stands were inspected for sawfly eggs. A pole pruner was used to cut limbs from some trees. In fresh logging areas, entire crowns of down trees were examined. This was only a cursory evaluation. To make a more accurate prediction, we would have to use a sequential sampling method for egg counts developed by Hard (1971), and evaluate the vigor of other life stages and the effects of natural control agents (Hard and Torgersen 1975).

RESULTS

Only a few eggs were found after 5-1/2 hours of sampling. Two males and one female adult sawfly were observed on needles. Hard and Torgersen (1975) mention that egg laying is completed by November 1 in Alaska. This egg survey might have been too early for total oviposition to have taken place, but surely the majority of egg laying should have been over by October 1.

DISCUSSION AND RECOMMENDATIONS

Because only a few eggs were found, I predict defoliation by the hemlock sawfly will not be as heavy in 1986 as it was in 1985 on the Bonners Ferry Ranger District, but there might be some light to moderate defoliation in Grass Creek on the Priest Lake Ranger District. No eggs were found in Continental or Spread Creeks, but defoliation could continue to be light in this area. An examination by Idaho State entomologists in August in the Priest Lake area revealed that most of the pupae in cocoons were parasitized.

We suspect some hemlock were top killed along Boundary Creek, especially on the Canadian side. This might have occurred also in Section 11 on Forest Service land along Boundary Creek.

Hard et al. (1976) state that adverse weather (cold, wet summers and falls), a fungus disease, parasites, and depletion of host foliage contribute to population collapses in Alaska. In 1985, there was a cold, wet, late summer, parasites were abundant, and host foliage was depleted along Boundary Creek. These are encouraging signs that this outbreak may collapse by the end of 1986. Also, infestations in southern British Columbia similar to this one only lasted 1 or 2 years.[2]

Direct suppression of this outbreak would probably not be practical. Even if suppression were economically feasible, no pesticides have been field tested or registered against this sawfly. By the time an insecticide could be registered to control the sawfly, this outbreak should have subsided.

I recommend that severely damaged trees be salvaged and that the outbreak be left to die out from natural causes, which I expect to occur within the next year.

REFERENCES

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[2]Telephone conversation with Dr. A. Van Sickle, Victoria, British Columbia, October 7, 1985.